

Special topic

Gender and personality in alcoholism

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Summary

The topic gender and personality in alcoholism is discussed on the background of a research project on clinical aspects of alcoholism at the University of Würzburg, Germany. The data of this study are presented in the context of two questions: Which personality differences are there between women and men dependent on alcohol, and is there a connection between these personality differences and features of the alcohol dependence? Additionally, we take a look at gender-related differences in the development of alcoholism. In a first step, gender differences in the development and the course of alcoholism are investigated. The data revealed only weak differences between female and male alcoholics when important confounding variables like age and education are taken into consideration. Secondly, the female and male alcoholics are matched according to age and education and their personality structures are compared by using several well-established and standardized self-report questionnaires. No serious gender differences concerning the main characteristics of alcohol dependence could be discovered. However, some remarkable personality differences between female and male alcoholics are found: women scored significantly higher on Neuroticism and Harm-Avoidance while men reached significantly higher scores on Venturesomeness and Sensation-Seeking. In order to detect a possible connection between alcoholism and gender-related personality differences, both males and females are subdivided into two groups using the scores of Neuroticism, Harm-Avoidance, Venturesomeness and Sensation-Seeking, respectively. We have found no indication for a gender-specific relevance of personality differences between female and male alcoholics with regard to Harm-Avoidance, Venturesomeness or Sensation-Seeking. However, differences in Neuroticism have revealed a greater relevance in alcohol-dependent women than in men.

Keywords: Gender; alcoholism; neuroticism; personality; harm-avoidance; venturesomeness; sensation-seeking.

Introduction

Key personality traits

An examination of the relationship between personality and alcoholism presupposes that clearly identified

dimensions of personality exist and can be agreed upon. This, however, is not necessarily the case. Numerous personality traits have been studied, and it is often unclear whether the various traits represent unique, partially overlapping, or largely overlapping constructs. The most widely accepted models of personality focus on either three major dimensions – the so-called “Big Three” – or on five major dimensions – the so-called “Big Five”.

Hans Eysenck might be considered the father of the “Big Three” models. Eysenck's bio-psychological research led him to the identification of the three personality dimensions of Neuroticism versus Emotional Stability, Extraversion versus Introversion and Psychoticism (Eysenck, 1990).

Another “Big Three” model – Cloninger's three-dimensional model of personality (Cloninger, 1987) – is noteworthy here as well because it has frequently been applied in the research literature on alcohol-use disorders. Cloninger's model of personality targets the higher-order temperamental constructs of Harm-Avoidance, Novelty-Seeking and Reward-Dependence. In the revision of his theory, Cloninger proposed Persistence (which was previously considered a sub-factor of Reward-Dependence) as a fourth major dimension of temperament, and adds three (non-temperamental) character traits (Self-Directedness, Cooperativeness and Self-Transcendence), to yield a seven-factor theory of personality (Cloninger et al., 1993).

For some years the Five-Factor Model of personality has gained prominence in psychology. Although several versions of the “Big Five” exist, we will focus on only the

version developed from the questionnaire tradition by Costa and McCrae (1989). Those researchers compared competing systems of personality structure and identified major dimensions that were common across many models. The five factors that comprise Costa and McCrae's "Big Five" model include Extraversion, Neuroticism, Openness to Experience, Agreeableness and Conscientiousness.

In the context of alcoholism, two additional personality traits – namely Impulsivity and Sensation-Seeking – are to be discussed because the assessment of these traits seems to be an effective way to identify individuals at risk prior to the initiation of high risk drinking behavior. Much of the research on the personality traits of alcohol dependent individuals has focused on the relationship between impulsivity and alcoholism.

Scales for the measurement of impulsiveness include different components. Impulsiveness is reputed to persons who act and/or decide quickly and/or act without plans of action and/or enter risks lightly and/or are careless.

Sensation-Seeking is defined by Zuckerman as a trait characterized by "the seeking of varied, novel, complex and intense sensations and experiences, and the willingness to take physical, social, legal and financial risks for the sake of such experience". (Zuckerman, 1994, p. 24)

Gender and personality

Gender has been reported to have an influence on personality traits. Consistent gender differences have been

reported for Neuroticism, Psychoticism, Harm-Avoidance and Reward-Dependence. Less consistent gender-related differences have been established for Impulsivity and Sensation-Seeking. Women generally score higher on Neuroticism, Harm-Avoidance and Reward-Dependence and men score higher on Psychoticism and some measures of Impulsivity and Sensation-Seeking (Cloninger et al., 1994; Eysenck and Eysenck, 1976; Eysenck et al., 1985; Hesselbrock, 1986; Hesselbrock et al., 1985; Zuckerman, 1979; Zuckerman and Neeb, 1980; Zuckerman et al., 1978).

Gender and alcoholism

Alcoholism is a male-predominated disorder. Most epidemiological studies of the last two decades have found that the rates of alcohol abuse and dependence were about five times higher in men than in women (Table 1).

Schmidt (1997) documented differences in the development of alcoholism in alcohol-dependent women and men at the Department of Psychiatry at the University of Berlin (Germany). Patients who had gone into detoxification treatment for the first time were examined. His data show that men pass through the central stages of alcoholism significantly earlier than women.

Mann and Ackermann (2000) reported the results of a German study at the University Hospital in Tübingen on gender-specific differences between women and men dependent on alcohol. The most important result of that

Table 1. Gender differences in the lifetime prevalence rates of alcohol abuse/dependence in different epidemiological studies of the last twenty years

	Women	Men	Sex
<i>Epidemiological Catchment Area Study (ECA)</i>	4.6	23.8	0.2
USA, N = 19182, age: ≥ 18 years, DIS, DSM-III (Robins et al., 1985)			
<i>Munich Follow-up Study</i>	5.1	21.0	0.2
Germany, N = 458, age: 15–64 years, DIS, DSM-III (Wittchen et al., 1992)			
<i>National Comorbidity Survey (NCS)</i>	14.6	32.6	0.4
USA, N = 8098, age: 15–54 years, CIDI, DSM-III-R (Kessler et al., 1994)			
<i>Netherlands Mental Health Survey and Incidence Study (NEMESIS)</i>	5.8	28.3	0.2
Netherlands, N = 7076, age: 18–64 years, CIDI, DSM-III-R (Bijl et al., 1998)			
<i>Munich Youth Study</i>	7.0	25.1	0.3
Germany, N = 3021, age: 14–24 years, M-CIDI, DSM-IV (Wittchen et al., 1998)			
<i>Lübeck TACOS-Study</i>	2.5	14.0	0.2
Germany, N = 4075, age: 18–64 years, M-CIDI, DSM-IV (Meyer et al., 2000)			

DIS: Diagnostic Interview Schedule; CIDI: Composite International Diagnostic Interview; M-CIDI: Munich Composite International Diagnostic Interview.

study is the remark that on average women become dependent on alcohol later than men. However, they then develop resultant ravages significantly faster than men, although the resultant ravages from alcohol dependence are comparable between both women and men with regard to. This effect is called the “telescoping of alcoholism in women”.

Personality and alcoholism

On principle there are a number of ways that personality and alcoholism can be related to each other (Sher et al., 1999). Correlations between personality variables and alcoholism can be generated by undetected confounds at the measurement or design level. This can be regarded as related spuriously. Moreover, it is possible that personality and alcoholism can be spuriously related because of a “third-variable” causation. Age and gender could be two examples for such a “third-variable” explanation.

Personality characteristics are discussed as predisposing factors as well as a consequence of alcoholism. Therefore, it is important to distinguish between pre-alcoholic and clinical alcoholic personalities. Several personality characteristics – primarily Neuroticism, Impulsivity/Disinhibition and Sensation-Seeking – have been found to correlate with risk for alcoholism, pre-alcoholism or clinical alcoholism (Cloninger et al., 1988; Sher and Trull, 1994; Zucker et al., 1995; Zuckerman, 1994).

Personality, gender and alcoholism

The relationship between gender and personality is a seldomly discussed topic in alcoholism research. An example for the consideration of the interaction between gender, personality and alcoholism is the differentiation of type 1 and type 2 alcoholics introduced by Cloninger (1987). Type 1, found in both female and male alcoholics, has a later age of onset, a psychological dependence on alcohol that leads to a loss of control over drinking after periods of abstention, and guilt and fear engendered by the alcoholic dependence. Type 2, found primarily in men, is characterized by an inability to abstain at all, and by fighting and arrests when drinking. Cloninger's classification specified three personality traits distinguishing Type 1 and Type 2 alcoholics: The Type 1 personality is characterized as low in Novelty-Seeking, high in Harm-Avoidance, and high in Reward-Dependence. In contrast, Type 2 personality is high in Novelty-Seeking, low in Harm-Avoidance, and low in Reward-Dependence.

In this paper we present some data from a study we carried out in Würzburg in the context of the following questions:

Which personality differences are there between women and men dependent on alcohol, and is there a connection between these personality differences and features of the alcohol dependence? Additionally we will take a look at gender-related differences in the development of alcoholism as discussed above.

Methods

Subjects

To examine the questions formulated above, we arranged female and male patients who consecutively entered the Alcohol Treatment Program at the Department of Psychiatry, at the University of Würzburg (Germany) into a sample of matched pairs. The matching variables were age and standard of education, indicated by a measurement of verbal ability using a vocabulary test (WST; Schmidt and Metzler 1992).

The inclusion criteria consisted a long-lasting primary alcohol dependence (at least 5 years) and the meeting with at least five out of eight International Statistical Classification of Diseases, 10th Revision (ICD-10) criteria for dependence. The disease was diagnosed by a trained interviewer using the Semi-Structured Assessment for the Genetics of Alcoholism (Buchholz et al., 1994). This assessment garnered demographic information, personal history of alcohol and/or drug abuse, and occurrence of major alcohol-related life problems. Alcohol consumption was calculated as the average number of drinks per day (one drink corresponds to 8 g of ethanol) during the 3 months before admission.

Individuals were not included in the study when they reported a history of illegal drug use, or when they were tested drug-positive on the urine test administered at the time of admission or during their in-patient treatment. Further reasons for exclusion were psychiatric co-morbidity, axis-II disorder and severe neurological or medical disorders. All patients were Caucasian and native German speakers. They all gave their informed written consent before participating in the study. Also prior to inclusion in the study, all individuals underwent clinical detoxification according to routine procedures.

The sociodemographic characteristics of the subjects are summarized in Table 2. There is only one difference between the two samples worth mentioning. This reflects the fact that women are less often employed than men and therefore more likely to work as homemakers.

The main characteristics of alcohol dependence are depicted in Table 3. No serious differences between women and men dependent on alcohol are revealed there.

Measurement of personality

To investigate personality differences between women and men dependent on alcohol we used several well-established and standardized self-report questionnaires. For the assessment of personality dimensions based on the five-factor model of McCrae

Table 2. Some demographic characteristics of the matched sample of alcohol-dependent women and men

	Women (n = 43)	Men (n = 43)	P ^{a)}
Age			
M	42.8	43.1	0.886
S.D.	9.1	8.8	
range	21–61	24–59	
Family status			
Married	29 (67)	23 (53)	0.513
Single	4 (9)	7 (16)	
Widowed	1 (2)	1 (2)	
Divorced/separated	9 (21)	12 (28)	
Without graduation	3 (7)	1 (2)	0.377
Elementary school	22 (51)	29 (67)	
Junior high school	9 (21)	9 (21)	
High-school	4 (9)	2 (5)	
University	5 (12)	2 (5)	
Occupational status			
Employed	18 (42)	23 (53)	0.042
Unemployed	12 (28)	15 (35)	
Housewife/houseman	11 (26)	1 (2)	
Pupil/student/education	1 (2)	2 (5)	
Retired	1 (2)	2 (5)	

^{a)} Statistical comparison between women and men; *P*-values (always two-tailed) of χ^2 -tests and *P*-value of a *t*-test for dependent samples (age). Values in parentheses are percentages.

and Costa, we used the German version of the NEO-Five Factor personality inventory (NEO-FFI; Borkenau and Ostendorf, 1993). It is a 60-item self-rating questionnaire intended to operationalize the five-factor model of personality (Costa and McCrae, 1989). It was developed with rational and factor-analytic methods to measure the five factors of Neuroticism (NEO-N), Extraversion (NEO-E), Openness to experience (NEO-O), Agreeableness (NEO-A), and Conscientiousness (NEO-C) on five scales consisting of 12 items each.

Table 3. Main characteristics for alcohol dependence of the matched sample of alcohol-dependent women and men

	Women (n = 43)		Men (n = 43)		P ^{a)}
	M	S.D.	M	S.D.	
Number of ICD-10 dependency criteria met	5.5	1.3	5.4	1.6	0.296
Age of alcoholism onset	33.6	10.3	31.7	11.0	0.946
Duration of alcohol dependence	8.4	8.0	10.5	7.9	0.644
γ -Glutamyl-Transferase	159	406	149	241	0.870
Alcohol intake (g/day) before detoxification ^{b)}	152	79.4	193	89.6	0.121
Withdrawal Syndrome Scale	2.5	2.3	2.0	2.1	0.877
Munich Alcoholism Test	30.6	7.4	30.8	6.7	0.595
Family history for alcoholism					
Positive		15		18	0.636
Negative		28		25	

^{a)} Statistical comparison between women and men; *P*-values (always two-tailed) of *t*-tests for dependent samples (age) and *P*-value of a χ^2 -test (family history).

^{b)} Average number of drinks per day during the last three months prior admission; one drink = 8 g alcohol.

The Temperament and Character-Inventory (TCI; Cloninger et al., 1994) was used to assess Cloninger's Temperament and Character traits. The TCI, a 226-item, true-false self-rating questionnaire, is an expanded version of Cloninger's Tridimensional Personality Questionnaire (TPQ) based on a psychobiological model of the structure and development of personality (Cloninger 1987; Cloninger et al., 1993). Together with 12 subscores, scores for four temperament dimensions – Novelty-Seeking (TCI-NS), Harm-Avoidance (TCI-HA), Reward-Dependence (TCI-RD) and Persistence (TCI-P) – and three character dimensions, i.e. Self-Directedness (TCI-SD), Cooperativeness (TCI-C), and Self-Transcendence (ST), are supplied. In the present study we used the German version of this questionnaire as translated by Richter, Bollow, Eisenmann et al. (1999; see also Weijers et al., 1999).

Additionally, we employed Zuckerman's Sensation-Seeking scale (SSS) and Eysenck's Impulsiveness-Venturesomeness-Empathy scale (I7). The German version of the I7 (Eysenck et al., 1990) is a 47-item self-report questionnaire. It yields three independent scores for Impulsiveness (I7-Imp), Venturesomeness (I7-Vent) and Empathy (I7-Emp). I7-Imp reflects poor behavioral control and lack of ability to delay gratification; I7-Ven reflects sensation-seeking and sociability; and I7-Emp reflects sensitivity to the feelings and reactions of others as well as susceptibility to social cues (Weyers et al., 1995).

The different self-rating scales were administered individually in always the same order during several approximately 1-h morning sessions once a week after at least 40 days of in-patient treatment. At this time all participants were detoxified and without any symptoms of prolonged withdrawal. They were carefully checked for abstinence and not under psychoactive medication.

Data analysis

As mentioned above we arranged the female and male patients of our sample into a sample of matched pairs by using age (± 5 years) and education (verbal-IQ ± 10) as matching variables.

To analyze gender-related differences in the development of alcoholism in our sample we used the information gained from the SSAGA concerning the personal history of alcohol abuse,

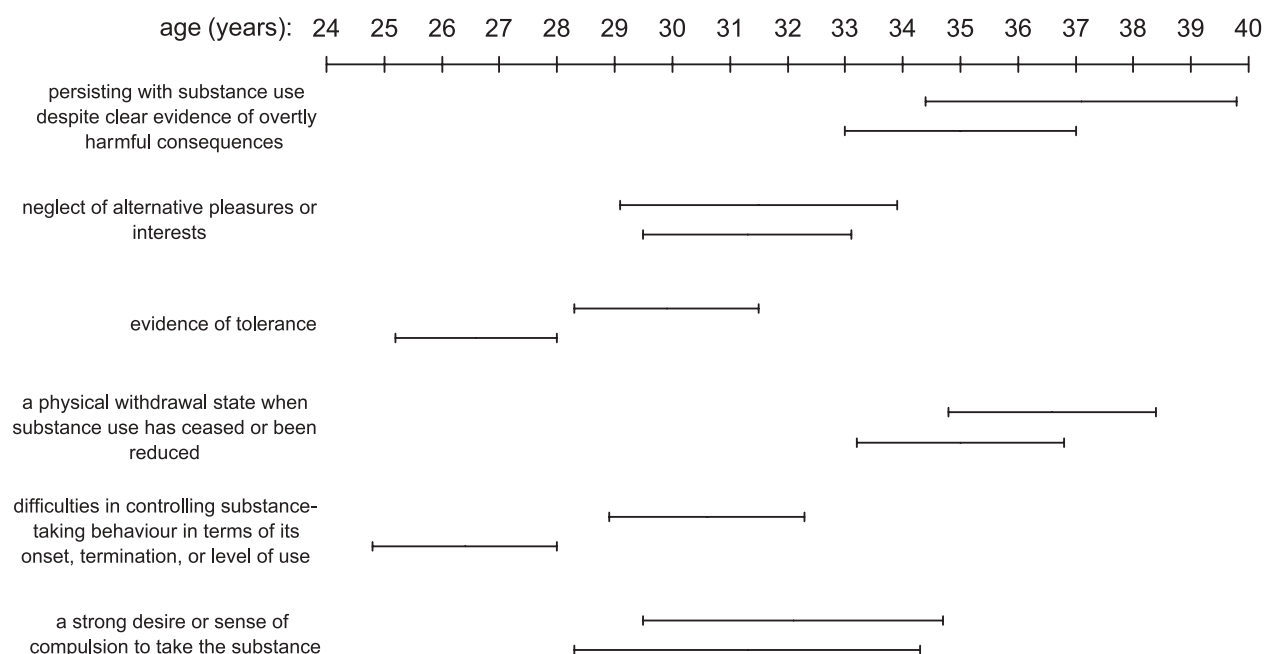


Fig. 1. Mean age ($\pm$ SEM) at which the ICD-10 dependency criteria were met for the first time in a matched sample of alcohol-dependent women (upper line) and men (lower line)

Table 4. Personality characteristics of the matched sample of alcohol-dependent women and men

	Women (n = 43)		Men (n = 43)		P ^{a)}
	M	S.D.	M	S.D.	
<i>Costa & McCrae's "Big Five"</i>					
Neuroticism	2.1	0.6	1.7	0.5	0.000
Extraversion	2.2	0.5	2.2	0.5	0.346
Openness to experience	2.4	0.5	2.2	0.5	0.200
Agreeableness	2.6	0.4	2.4	0.4	0.036
Conscientiousness	2.7	0.5	2.8	0.4	0.450
<i>Cloninger's Temperament- and Character-Traits</i>					
Harm-avoidance	19.4	6.1	14.7	6.8	0.002
Novelty-seeking	18.8	5.0	20.0	7.0	0.516
Reward-dependence	15.6	3.1	14.6	3.6	0.289
Persistence	4.0	1.8	4.6	1.9	0.171
Self-directedness	30.0	6.9	32.5	5.5	0.070
Cooperativeness	32.5	4.0	32.3	4.9	0.848
Self-transcendence	14.0	5.8	12.3	7.3	0.340
<i>Eysenck's 17</i>					
Impulsiveness	8.5	4.1	7.6	3.2	0.223
Venturesomeness	5.9	3.2	8.7	3.1	0.000
Empathy	10.5	2.7	8.7	3.3	0.013
<i>Zuckerman's Sensation-Seeking</i>					
Sensation-seeking (Total)	13.0	4.2	17.4	5.3	0.000
Thrill and adventure-seeking	2.9	2.3	5.2	3.0	0.000
Experience-seeking	4.6	1.5	4.7	1.5	0.730
Disinhibition	2.0	1.3	3.5	1.7	0.000
Boredom susceptibility	3.4	2.0	4.0	1.9	0.222

^{a)} Statistical comparison between women and men; P-values (always two-tailed) of *t*-tests for dependent samples.

Table 5. Main characteristics for alcohol dependence of the matched sample of alcohol-dependent women and men low and high in neuroticism

	Women					Men				
	N _{low} ^{a)} (n = 22)		N _{high} (n = 21)		P ^{b)}	N _{low} (n = 21)		N _{high} (n = 22)		P
	M	S.D.	M	S.D.		M	S.D.	M	S.D.	
Number of ICD-10 dependency criteria met	4.9	1.3	6.1	1.1	.015	5.2	1.5	5.7	1.7	0.369
Age of alcoholism onset	36.4	9.9	31.1	10.2	.147	31.0	10.7	32.5	11.5	0.686
Duration of alcohol dependence	7.8	8.1	9.0	8.1	.684	10.6	8.2	10.5	7.8	0.961
γ -Glutamyl-Transferase	227	560	96	166	.378	154	284	142	147	0.889
Alcohol intake (g/day) before detoxification ^{c)}	129	67	187	81	.038	190	97	197	83	0.811
Withdrawal Syndrome Scale	1.9	2.2	3.1	2.4	.186	1.9	1.7	2.2	2.5	0.670
Munich Alcoholism Test	27.5	7.1	34.1	6.4	.049	30.7	5.8	30.8	8.0	0.979
Family history for alcoholism										
Positive		9		11	.611		12		11	0.802
Negative		6		5			9		7	

^{a)} N_{low}: Neuroticism-Score below the sample median; N_{high}: Neuroticism-Score above the sample median.

^{b)} Statistical comparison between women and men; P-values (always two-tailed) of *t*-tests for independent samples and P-value of a χ^2 -test (family history).

^{c)} Average number of drinks per day during the last three months prior to admission; one drink = 8 g alcohol.

and the occurrence of major alcohol-related life problems. This information was decoded as that age at which the different ICD-10 diagnostic criteria of dependency were met for the first time.

Differences between women and men were tested by using multiple *t*-tests for dependent samples. Probability levels were two-tailed. To evaluate the significance of the personality differences between women and men we adjusted the alpha-level of $\alpha = 0.05$ by executing the Holm-procedure.

In order to uncover a possible connection between alcoholism and gender-related personality differences, the females and males were each subdivided into two groups using the median split procedure for the scores of those personality-scales which differed significantly.

Then we compared the main alcoholism characteristics between each of the two groups in women and in men. The statistical analyses were implemented using SPSS for Windows 10.0.

Results

Figure 1 presents the range of the mean age at which the ICD-10 diagnostic criteria of dependency were met for the first time in our matched sample of alcohol-dependent women and men. It can be seen that evidence of tolerance and loss of control appears a little earlier with men than with women.

The results concerning personality differences between female and male alcoholics are summarized in Table 4. Due to the fact that the alpha-level has to be adjusted, only the following differences are significant in a statistical sense: women scored significantly higher on Neuroticism and Harm-Avoidance, men scored significantly higher on Venturesomeness and Sensation-Seeking (Total).

In order to uncover a possible connection between alcoholism and personality differences between women and men, the females and males were each subdivided into two groups using the median split procedure for the scores of Neuroticism, Harm-Avoidance, Venturesomeness and Sensation-Seeking (Total), respectively. We have found a relationship between gender-related personality differences and main characteristics of alcoholism only with Neuroticism: statistically men with high and low values are not significantly different from each other with respect to main characteristics of alcoholism. In contrast, women with high and low Neuroticism-scores are significantly different in regard to the number of ICD-10 criteria fulfilled, the amount of alcohol intake before detoxification and the weighted score of the Munich alcoholism test (Table 5).

Discussion

Several authors reported the so-called “telescoping of alcoholism in women” (see introduction). In the present study we have found that evidence of tolerance and loss of control appears with men a little earlier than with women. In summary, however, gender differences in the development of alcoholism have been demonstrated as only minor and statistically insignificant by our study. We also found no serious differences between women and men dependent on alcohol with regard to main characteristics of alcohol dependence. So we assume that if important confounding variables like age and education are considered, the differences between women and men dependent on alcohol are only low at central features of

the illness. It may be that this is a more contemporary development. On the other hand it may also indicate the necessity for carefully arranged study samples. Further research is required to throw light on this aspect of alcoholism in the future.

As it was to be expected on the account of the data discussed in the introduction, women scored significantly higher on Neuroticism and Harm-Avoidance. Men, on the other hand, scored significantly higher on Venturesomeness and Sensation-Seeking. Considering the differences at the item-level, we can conclude that in comparison with men, alcohol-dependent women tend to view themselves as more often inhibited by unfamiliar people or situations. They more often feel tense and anxious in unfamiliar or uncertain situations, even when there is little to worry about. Additionally, they more often declare that they have difficulties in getting over humiliating and embarrassing experiences. At the Neuroticism scale, the women view themselves mainly as anxious and often plagued with feelings of inferiority. The gender difference at the I7-Venturesomeness scale and the Thrill and Adventure-Seeking subscale of the Sensation-Seeking scale consistently reflects the fact that men are more often engaged in risky sports as windsurfing or skydiving. This is some evidence for the opinion that impulsivity and sensation-seeking are typically associated with masculine roles. The gender differences at the Disinhibition subscale of Zuckerman's Sensation-Seeking scale mainly reflect that only a few women declare that they enjoy watching "sexy" scenes in movies, and that only a few men do not enjoy the company of sexually-exciting women. In summary personality differences between males and females with a diagnosis of alcohol-use disorders are comparable to those found between non-alcoholic males and females.

We have found no indication of a gender-specific relevance of personality differences between female and male alcoholics with respect to Harm-Avoidance, Venturesomeness or Sensation-Seeking. However, it seems that differences in Neuroticism are of greater relevance for women dependent on alcohol than for their male counterparts. It seems that there is a relationship between Neuroticism and the clinical characteristics of alcohol-dependence in female alcoholics only.

In summary, as a result of our findings we tend to the conclusion that in carefully arranged samples of primary alcoholics, disease-related differences between women and men are only low.

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